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THE FORESTS AND THE LUMBERING INDUSTRIES OF CALIFORNIA

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The commercial forests of California are made up of coniferous or softwood species, and are confined in general to the mountainous portions of the State. The forests of the Sierra Nevada, Klamath, and Coast Range mountains surrounding the great valley are included in the pine region, while the timber stands in the area lying between the Coast range mountains and the ocean and consisting mainly of choppy hills extending southward from the Oregon line to Monterey County, lie within the redwood region. The large valleys of the State are mainly treeless.

Limited stands of hardwood species occur along stream bottoms, and on the rolling hills or bench lands in the foothills. These hardwoods comprise several species of oak, including live oak, white oak, black oak, and tan oak, in addition to laurel, alder, ash, maple, chinquapin, and madrone, but are little used except for firewood.

The first conifer encountered in ascending from the valleys in the pine region is the digger pine, a tree of straggling form which occurs scatteringly with chaparral and woodland trees and is practically unused except for fuel. Above 1,000 to 2,000 feet elevation, according to location, appears the ponderosa pine, formerly called western yellow pine, which is the most important timber tree in the State. This tree attains large size, on the best sites sometimes reaching diameters of 70 or 80 inches and a height of over 200 feet. The maximum diameter is about 10 feet.

Above 2,000 to 4,000 feet elevation, depending on latitude and exposure, the ponderosa pine occurs in mixture with a number of other species, forming the "mixed-conifer" type. This mixed forest is characteristically dominant throughout the pine belt, and includes besides the ponderosa pine such species as sugar pine, Douglas fir, white fir, and incense cedar. The sugar pine is the largest pine in the world, occasional trees reaching 10 feet diameter, and the maximum dimensions being 12 feet diameter and 240 feet height. Mixed conifer stands reach a maximum volume of over 100,000 board feet per acre. The average for the California pine region is about 25,000 feet.

The mixed-conifer type of forest gives way, above 6,000 feet in the northern part of the State and 8,000 feet in the southern Sierras, to the true fir types, including white fir and red fir, in which the California red fir becomes the dominant species with increasing altitude. Above this fir belt occurs some Western white pine, which is succeeded by the scattered and stunted subalpine species such as white bark and foxtail pines next to timberline. At the higher elevations in the mountains of southern California there occur limited stands of sawtimber, but inaccessibility of the timber and higher value for recreation prevent commercial utilization.

In the redwood region the dominant species is the Coast redwood, which grows to very large size and forms very heavy stands. Individual redwood trees not infrequently surpass 15 feet in diameter and 300 feet in height, with maximum dimensions in excess of 20 feet and 350 feet respectively. The average redwood stand is about 60,000 board feet per acre in Del Norte and Humboldt Counties, and progressively lighter southward. A few are of record exceeding a million feet per acre. Except on the best sites, redwood usually occurs with Douglas fir, or sometimes white fir, accompanied frequently by a mixture of hardwood species including tanbark oak, madrone and chinquapin. Sitka spruce and western hemlock also enter this type sparingly from the north. Redwood grows only in a narrow belt near enough to the coast to be reached by ocean fogs. Beyond this belt the redwood is succeeded by Douglas fir and hardwoods, which link the redwood with the mountain pine forests. This Coast redwood should not be confused, in respect to unique size, with the giant sequoia which occurs in the mixed conifer belt of the Sierra Nevada, in very limited stands that become isolated groves toward the north. The latter tree attains a maximum diameter of over 35 feet and an age of some 4,000 years, which is approximately double the maximum recorded age of the Coast redwood. The giant sequoia is so unique a tree that it should never be lumbered and is increasingly being protected from such use.

Forest Areas and Stands

Forest lands in California originally comprised more than 20 million acres of timber, but there remain at the present time only about 10 million acres of old-growth sawtimber, and about 9.7 million acres of cut-over forest, divided almost equally between second-growth, restocking, and deforested areas. About 17 million acres of the total remaining forest area are included in the pine region, while approximately 2.7 million acres are within the redwood region. Nearly a half million acres of forest land have been taken over for agriculture, but farming is confined in general to the non-timbered valley lands.

The total stand of old-growth timber remaining in California, estimated at 56 percent of the original stand, amounts to about 263 billion board feet, or 17 percent of the remaining sawtimber in the United States. The bulk of the mature timber is in the counties extending from the northern end of the State southward through the Sierra Nevada mountains, in the pine region, and in Del Norte, Humboldt and Mendocino Counties in the redwood region. Present estimates indicate that ponderosa pine constitutes about 27 percent of the total remaining timber, redwood 20 percent, sugar pine 11 percent, with Douglas fir, the true firs, and incense cedar making up most of the balance of 42 percent.

Nearly 83 percent of the total area of old-growth timber in California is in the pine region, but this region's footage of sawtimber makes up only 71 percent of the total in the State. The redwood region, with its heavy stands per acre, occupies only 17 percent of the area of mature forest but contains 29 percent of the remaining sawtimber.

The total area of nearly 20 million acres of forest land in the State is divided almost equally between public and private ownership, with nearly all of the public forests in the pine region. While public

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lands, most of which are in the National Forests, comprise about half the total forest area and 61 percent of the mature timber area, the heavier and more accessible stands are held so largely by private timber operating and holding companies that only 37 percent of the present stand of merchantable sawtimber is in public ownership. Thus far there have been no national forests in the redwood region and only 3 percent of the mature timber in that region is publicly owned, compared to 52 percent in the pine region.

Lumber and Timber Industries

Present commercial utilization of the timber in California is mainly by large to medium-sized sawmills manufacturing lumber. In 1934, for example, 19 mills each having an output in excess of 15 million board feet per year produced 74 percent of the total lumber cut. There were about 150 portable sawmills each cutting less than a million board feet, and comprising 68 percent of the operating mills in 1934, but these mills produced only 3.5 percent of the total lumber production.

Lumber production in California in 1900 amounted to about 0.7 billion board feet, equivalent to about 2 percent of the total cut in the United States. Production increased rather slowly up to 1921, averaging about 1.2 billion board feet a year, but showed rapid increases during the "twenties", chiefly in response to post-war demands and rapid population growth in the State. Total output reached a peak of 2.2 billion board feet in 1926, bringing California up to fifth place in national production, but in 1932 the cut amounted to only 0.7 billion feet, or about 35 percent of the pre-depression level. Output increased in both 1933 and 1934, however, exceeding a billion feet in the latter year.

The value of lumber and timber products cut in California reached a peak of almost 90 million dollars in 1923, but declined to about 68 million dollars in 1929, and to 15 million dollars in 1932. Mill values of lumber showed greater declines than the general price level after 1929, largely because over capacity in the industry and competition for markets prevented curtailment of output or maintenance of prices. Stumpage values increased somewhat during the last 15 years for ponderosa pine, sugar pine, and Douglas fir, but showed little change for redwood and white fir.

The bulk of the lumber cut from the forests of California is produced in Siskiyou, Lassen, Butte, and El Dorado Counties in the pine region, and in Humboldt and Mendocino Counties in the redwood region. Ponderosa pine is the most important species cut, making up 40-50 percent of the total output, while redwood accounts for 20-27 percent, and sugar pine for 10-15 percent of the lumber produced, with Douglas fir and white fir together supplying another 10-18 percent, according to the year. Prior to 1930, nearly 20 percent of the California cut came from national forest lands, compared to about 12 percent during the depression years.

Nearly a third of the lumber produced in California during recent years has been exported to eastern states and to foreign countries. Most of the out-of-state shipments, which are mainly Select and Shop grades of ponderosa pine, sugar pine, and redwood, have been absorbed by wood-using industries in Mid-Western and Atlantic Coast States. Freight rates on

out-of-state shipments have averaged nearly $15.00 per M board feet in the last 15 years, while freight payments on these shipments have totalled about $12,000,000 a year.

California sawmills in 1929 employed about 23,200 wage and salary earners, equal to 6.4 percent of the industrial workers in the State. Prior to the depression about 26,000 workers were employed in sawmills, with wage and salary payment approximating $38,000,000, or 6 percent of the State's total industrial payroll. Employment in 1933 was only about 60 percent of the 1929 level, with production and wage payments equal to about one-third the 1929 figures. While small mills saw only a small portion of the total lumber cut at the present time, in many cases the work which they afford is of considerable importance in supplementing agircultural or other employment in or near forest areas.

Forest employment is not entirely supplied by sawmills, however, since the lumber cut makes up only about three-fourths of the total commercial products obtained in California forests. In the cutting of other forest products, such as fuelwood, posts, ties, and mine timbers, a considerable amount of additional employment is provided, especially for farmers and part-time woods workers. It is estimated that production of minor products equal to that in 1929, provides employment for the equivalent of possibly 2,000 full-time workers.

Forest Drain

The pre-depression average annual drain on the forests of California resulting from cutting and other losses has been estimated at 706 million cubic feet, or approximately 5.5 times the estimated growth of 129 million cubic feet. Drain exceeded growth about 6.2 times in the pine region and about 3.6 times in the redwood region. About 60 percent of this total annual drain, or roughly 2 billion board feet, represents cutting for such commercial products as lumber, fuelwood, posts, and ties, while the balance of the forest depletion includes "non-commodity" losses from insects, disease, and fire. More than two-thirds of the total drain for commercial products, and about 96 percent of the non-commodity losses, are in the pine region.

Of the present estimated growth of 129 million cubic feet, approximately 71 percent is in the pine region, chiefly on areas logged or burned over in early mining days. Mature timber stands in all regions are putting on about 16 percent of the total growth, and second-growth sawtimber stands about 19 percent, while restocking areas supporting young growth account for about 65 percent of the total increment.

The increasing depletion of the forests of the east may increase the future demands upon California forests until eastern regrowth becomes of merchantable size. In view, however, of the generally declining per capita consumption of lumber, production in California is expected to remain fairly steady at about the pre-depression level. If the past rate of drain continues, the estimated stand of mature sawtimber would last about 75 years in the pine region and 120 years in the redwood region.

Removal of old decadent timber, on the other hand, should both reduce the rate of timber depletion from insects and disease and increase materially the total growth on the increasing area of younger stands. With intensive forest management it is estimated that growth in California forests could be increased in 70 years to almost double the present drain for commercial products.

If all forests, private as well as public, were managed on a continuing yield basis instead of being cut as on most privately owned land solely for the maximum present yield without care for the subsequent fate of the land and forest, large amounts of employment would be provided for tributary populations, in addition to that from lumbering or other harvesting of the wood crop. This would be through the cultural operations in caring for the succeeding crop as well as the protection of the whole property from fire, diseases, and trespass. Tributary communities would then have a continuing basis of stabilized prosperity, instead of a feverish but short-lived one succeeded by decay and stagnation.

STAND OF MERCHANTABLE OLD-GROWTH TIMBER IN CALIFORNIA - BY COUNTIES

TOTALS FOR THE STATE - PINE AND REDWOOD REGIONS

FEDERAL, STATE, AND PRIVATE OWNERSHIPS

SEPTEMBER, 1932

Estimates in M Feet B. M.

COUNTY	REDWOOD	SUGAR PINE	PONDEROSA PINE	OTHER SPECIES	TOTALS
Alpine	-	14,536	174,563	669,102	858,201
Amador*					
Butte	-	763,075	1,337,152	1,254,846	3,355,073
Calaveras **					
Colusa	-	19,150	76,519	156,236	251,905
Del Norte	7,790,740	160,000	22,000	5,450,260	13,423,000
El Dorado*	-	2,035,436	3,876,755	6,344,744	12,256,935
Fresno	-	1,053,528	3,349,894	6,301,023	10,704,445
Glenn	-	177,763	473,992	742,858	1,394,613
Humboldt	28,074,620	82,500	238,000	13,862,782	42,257,902
Inyo	-	-	7,700	253,130	260,830
Kern	-	57,000	520,820	68,417	646,237
Lake	-	294,798	492,252	1,230,449	2,017,499
Lassen	-	1,424,443	8,747,422	2,502,996	12,674,861
Madera	-	813,892	1,362,127	2,127,310	4,303,329
Mariposa	-	1,227,285	944,309	1,223,791	3,395,385
Mendocino	14,891,200	98,446	400,290	7,025,068	22,415,004
Modoc	-	395,371	7,756,294	1,048,662	9,200,327
Monterey ***					
Mono	-	-	717,300	600,660	1,317,960
Nevada	-	289,857	562,086	1,471,597	2,323,540
Placer	-	718,751	1,108,906	2,894,020	4,721,677
Plumas	-	3,022,790	6,330,465	9,097,902	18,451,157
San Bernardino	-	44,330	309,803	385,616	739,749
San Mateo ***	350	-	-	49,650	50,000
Santa Cruz	1,322,590	-	-	697,410	2,020,000
Shasta	-	2,972,814	7,095,742	3,120,832	13,189,388
Sierra	-	846,948	1,666,752	3,882,318	6,396,018
Siskiyou	-	4,692,869	8,902,980	15,931,128	29,526,977
Sonoma	537,000	-	-	431,600	968,600
Tehama	-	1,194,364	2,469,251	3,298,232	6,961,847
Trinity	-	2,053,518	3,224,122	6,837,840	12,115,480
Tulare	-	670,354	3,492,248	3,611,755	7,774,357
Tuolumne **	-	4,070,353	5,258,089	6,590,546	15,918,988
Yuba	-	294,143	177,442	441,625	913,210
Ventura	-	-	69,148	118,224	187,372
Totals	52,616,500	29,488,314	71,164,423	109,722,629	262,991,866

* Estimates for Amador and El Dorado combined -- see El Dorado
** " " Calaveras and Tuolumne " " Tuolumne
*** " " Monterey and San Mateo " " San Mateo

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